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IX.

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD
UNIVERSITY, NEW SERIES.

V.—THE NORTH AMERICAN SILENEÆ AND
POLYCARPEÆ.

BY B. L. ROBINSON.

Presented April 12, 1893.

THE following study of the *Sileneæ* and *Polycarpeæ* is preliminary to treatment of these tribes of the *Caryophyllaceæ* in the "Synoptical Flora of North America." The object of the present publication is chiefly to secure aid through criticisms, and to call attention to such species, especially in the genera *Silene* and *Lychnis* as are still imperfectly known, so that if possible more complete material of them may be secured before final revision for the first volume of the Synoptical Flora. Specimens of these groups, especially puzzling forms from the West and Northwest, together with notes concerning any points not properly covered by the following descriptions, will be gratefully received by the author, who here cordially acknowledges the valuable assistance already rendered him in his work by the late Dr. George Vasey and Dr. J. N. Rose, of the Department of Agriculture; Prof. N. L. Britton of Columbia College; Mr. and Mrs. T. S. Brandegee and Miss Alice Eastwood, of the California Academy of Sciences; Prof. John Macoun, of the Canadian Geological Survey; Mr. John H. Redfield, of the Philadelphia Academy of Natural Sciences; Mr. John Donnell Smith, and others, whose names are mentioned in the text. In the enumeration of synonyms and the citation of literature Dr. Sereno Watson's "Bibliographical Index" has been a most useful guide; so far as possible, however, all references to literature as well as points of synonymy, from whatever source, have been subjected to careful verification.

CARYOPHYLLACEÆ, TRIBE I. SILENEÆ. Sepals united into a 4-5-toothed or lobed tube or cup. Petals unguiculate and often scale-bearing at the junction of the blade and claw, borne together with

the stamens upon the stipe of the ovary. Stipules none. Flowers usually showy, perfect or not infrequently polygamous.

* Calyx subtended by 1-several pairs of bractlets: flowers solitary or often aggregated in close heads: seeds flattened and attached by the face: embryo nearly straight.

1. *Dianthus*. Calyx tubular, 5-toothed, finely many-striate. Petals 5, with long claws; the blade entire, emarginate, or several-toothed. Stamens 10. Styles 2. Capsule 1-celled, dehiscent by 4 valves. Leaves narrow, often connate by narrow scarious membranes. Flowers commonly showy.

2. *Tunica*. Calyx turbinate or cylindrical, obtusely toothed, distinctly 5-ribbed, or sometimes 15-ribbed. Petals 5. Stamens 10. Styles 2. Flowers considerably smaller and habit more slender than in *Dianthus*.

* * Calycine bractlets none: seeds laterally attached: embryo curved.

+ Styles 2: capsule 4-toothed or valved: introduced plants.

3. *Gypsophila*. Calyx turbinate, tubular or campanulate, 5-toothed, herbaceous only in the middle of the segments, the intermediate parts being scarious. Petals 5. Stamens 10. Flowers mostly small, paniculate or scattered, rarely aggregated. Capsule rather deeply 4-valved.

4. *Saponaria*. Calyx tubular or ovoid, 5-toothed, terete with numerous faint veins, or conspicuously 5-angled. Flowers showy. Petals 5. Stamens 10. Capsule dehiscent at the apex by 4 short teeth.

+ + Styles normally 3; capsule opening by 3 or 6 teeth: calyx commonly 10-nerved, rarely α -nerved.

5. *Silene*. Calyx 5-toothed, campanulate, subcylindric or turbinate, either inflated or becoming distended by the maturing capsule, 10- α -nerved. Petals usually appendaged at the summit of the claw; the blade variously toothed or divided, rarely entire. Stamens 10. Styles 3 (very rarely 4). Stipe of the ovary commonly developed. The capsule 1-celled or somewhat 3-celled at the base. Flowers solitary, racemose, or cymose-paniculate.

+ + + Styles 5 (rarely 4), alternating with the petals when of the same number: calyx teeth short, not foliaceous.

6. *Lychnis*. Calyx ovoid, obovate, or clavate, 5-toothed, 10-nerved, inflated or not. Petals with or without appendages; the blade entire, emarginate, bifid or variously cleft. Stamens 10. Ovary 1-celled, or divided at the base into 5 (rarely 4) partial cells. Capsule dehiscent by as many or twice as many teeth as there are styles.

← ← ← ← Styles 5, opposite the petals : calyx teeth conspicuously prolonged into foliaceous appendages.

7. *Agrostemma*. Calyx ovoid, with 10 strong ribs ; the elongated teeth in our introduced species an inch or more in length, exceeding the 5 large unappendaged petals. Stamens 10. Capsule 1-celled. Leaves linear.

TRIBE II. ALSINÆÆ. Sepals free or nearly so. Petals not distinctly unguiculate, never appendaged. Styles 2-5, distinct to the base. — Including genera 8-14 ; to be published at an early date.

TRIBE III. POLYCARPÆÆ. Sepals free or somewhat united at the base. Petals commonly small, not distinctly unguiculate, borne together with the stamens upon an hypogynous or slightly perigynous disk. Style simple below, 3- or more rarely 2-branched above. The stigmas rarely sessile on the ovary.

* Petals 2-5-parted.

15. *Drymaria*. Sepals 5, often scarious-margined. Petals 5. Stamens 3-5, slightly perigynous. Ovary 1-celled, several-many-ovuled. Capsule 3-valved. Flowers small, greenish white. Leaves flat, though often narrow, opposite or pseudoveriticellate. Stipules small, free, scarious or bristle-formed, sometimes fugacious.

* * Petals entire, denticulate, or none.

← ← Cauline leaves numerous, flat, not linear-setaceous.

16. *Polycarpon*. Sepals 5, more or less carinate, entire, scarious-margined. Petals 5, small, shorter than the sepals, sometimes emarginate. Stamens 3-5. Ovary 1-celled. Capsule 3-valved, several-seeded. Seeds ovoid with the embryo but little curved.

← ← Cauline leaves setaceous.

17. *Lœflingia*. Sepals 5, carinate and produced to rather rigid setaceous tips ; the three outer ones commonly bearing a setaceous tooth on each side. Petals 3-5, small or none. Stamens 3(-5 ?). Ovary 1-celled, several-seeded, triangular. Capsule 3-valved. Seeds oblong, attached laterally near the base. Embryo somewhat curved. Cotyledons accumbent.

← ← ← Leaves forming a radical rosette ; the cauline minute or obsolete : basal stipules lacerate.

18. *Stipulicida*. Sepals 5, distinct, somewhat rigid, obtuse, emarginate, scarious-margined. Petals 5, entire, narrowly oblong, gradually contracted below, hypogynous. Stamens 5. Capsule ovate-globose, 3-valved, many-seeded.

1. **DIANTHUS**, L. PINK, CARNATION. (*Διός* and *ἄνθος*, flower of Jove.) — Chiefly natives of S. Europe and N. Africa, deservedly popular in cultivation. — Gen. n. 364; DC. Prodr. i. 355; Reichb. Icon. Fl. Germ. vi. t. 248–268; Benth. & Hook. Gen. i. 144. — Several species tend to escape and have become more or less naturalized. One variety only is indigenous to this continent.

* Indigenous in the extreme Northwest.

D. alpinus, L. Low caespitose perennial with numerous ascending 1-flowered stems: bracts 2–6, erect or somewhat spreading. — Spec. 412; Regel, Ost-Sib. i. 284. — (Eur., Siberia.) Very variable and according to Regel passing into the following.

Var. repens, REGEL. Root single, vertical or descending, not repent: stems procumbent, much branched from near the base: branches simple, ascending, 3–6 inches in height, most often 1-flowered: leaves linear or linear-lanceolate, 8–16 lines long, glabrous, slightly fleshy: involucre scales a single pair, narrowly ovate, acuminate, nearly equalling the calyx, the attenuated tips slightly spreading: calyx somewhat inflated, 6 lines long: corolla purple, about 7 lines broad, glabrous, the obovate blade erose-dentate. — Regel, l. c. 286. *D. repens*, Willd. Spec. ii. 681; Cham. et Schlecht. Linnæa, i. 37; Torr. & Gray, Fl. i. 195; Seem. Bot. Herald, 27, t. iv. — Northern and western coast of Alaska. (Siberia.)

* * Adventive from Europe and more or less established in various localities in the Eastern and Middle States.

— Bractlets short, half the length of the calyx: flowers solitary.

D. DELTOIDES, L. (MAIDEN PINK.) Perennial: stems decumbent, ascending, a foot in height, very leafy below: leaves short, lanceolate, a line wide, the lower obtusish, the uppermost acute: calyx long, tubular: petals narrow, pink or white. — Spec. 411; Eng. Bot. i. t. 61; Gray's Man. ed. 6, 83. — Occasionally found escaped from gardens, New England to Michigan.

— — Bractlets narrow, attenuate, equalling or exceeding the calyx: flowers clustered.

D. BARBATUS, L. (SWEET WILLIAM.) A smooth perennial, 1–2 feet in height: stems simple, bearing the flowers in dense cymose fascicles: leaves lanceolate, large for the genus, $1\frac{1}{2}$ –3 inches long, a fourth as wide, minutely roughened on the edges: bractlets filiform from a lanceolate base: blade of petals triangular-obovate, toothed, red, purple or white, often variegated in cultivation. — Spec. 409; Reichb. Icon. Fl. Germ. vi. t. 248. — Long cultivated and occasionally spontaneous about old gardens.

D. ARMERIA, L. (DEPTFORD PINK.) Annual, 1–2 feet high, covered with a fine grayish pubescence: stems branching and bearing several 2–4-flowered fascicles: bracts subulate, attenuate, villous: flowers scentless: calyx slender, tubular, 7–8 lines long, the teeth very sharp: petals roseate, spotted with white; the blade elliptical, crenate-dentate. — Spec. 410; Pursh, Fl. 314; Bigel. Fl. Bost. 108; Torr. Fl. N. & Mid. St. 447; Torr. & Gray, Fl. i. 195. *D. armerioides*, Raf. in Desv. Journ. Bot. 1814, 269; Précis des Decouv. 36. *Atocion armerioides*, Raf. Autikon Bot. 29. *D. Carolinianus*, Walt. Car. 140, referred here by Sprengel, Syst. ii. 375, was without doubt founded upon error. Torrey & Gray, Fl. i. 676, state that Walter's own specimen was *Dodecatheon Meadia*. — Fields and pine woods, Eastern States from Maine (Portland Catalogue) to Maryland; Lansing, Michigan, *L. H. Bailey*; fl. June and July. Autumnal flowers in October noted by *L. F. Ward*.

— — — Bractlets broad, scarious, concealing the calyx.

D. PROLIFER, L. Annual, a foot or two in height: stems wiry: leaves narrow, minutely scabrous, acute: heads terminal, 2–several-flowered, enclosed in thin dry ovate obtusish mucronate imbricated bractlets: flowers expanding one at a time, ephemeral: calyx tubular; the veins faint, collected into five groups: petals small, notched, pink or red. — Spec. 410; Eng. Bot. xiv. t. 956. *Tunica prolifera*, Scop. Fl. Carn. ed. 2, i. 299. — New Jersey, *Durand*; Eastern Pennsylvania, *Smith, Porter*; Suffolk Co., N. Y., *Hollick*; fl. all summer. This species, especially in its calyx, forms a transition to the next genus.

2. TUNICA, Scop. (*Tunica*, a tunic, probably in reference to the close involucre.) Slender wiry-stemmed herbs with small mostly linear leaves. Flowers terminal, solitary or fascicled in small heads. — Fl. Carn. ed. 2, i. 298; Benth. & Hook. Gen. i. 145; Williams, Journ. of Bot. xix. 193 (1890). — Old World plants represented in America by a single species recently introduced.

T. SAXIFRAGA, Scop. Smooth: stems numerous, slender, branching, curved ascending: leaves small, linear, acute, less than half a line in width: the lower internodes very short: flowers small, numerous, terminal, solitary: bractlets 2 pairs, scarious except in the middle, acute, considerably shorter than the calyx: petals notched, pale purple; the blade a line in length. — Scop. l. c. i. 300; Reichb. Icon. Fl. Germ. vi. t. 246. — Roadsides near London, Ontario, *Burgess*. (Adventive from Europe.)

3. GYPSOPHILA, L. (*γύψος*, gypsum, and *φιλεῖν*, to love, from a supposed preference for soil rich in gypsum.) — Old World

herbs of graceful habit, mostly natives of Southern Europe and Western Asia. Several species are cultivated for ornament; the following are sparingly naturalized. — Gen. ed. 4, n. 498; DC. Prodr. i. 351 in part; Reichb. l. c. vi. t. 239–242; Benth. & Hook. Gen. i. 146; Williams, Journ. of Bot. xviii. 321.

G. MURALIS, L. Low, annual, with the habit of *Arenaria*: leaves small, linear, acute: flowers scattered in the forks of the branches: pedicels filiform, two or three times as long as the calyx: petals pink with darker veins, emarginate, 2–3 lines in length. — Amœn. Acad. iii. 24; Spec. ed. 3, 583; Fl. Dan. viii. t. 1268. — Ballast and roadsides, New Jersey, *Brown*; Montague, Mass., *Churchill*; Wethersfield, Conn., *Wright*; London, Canada, *Dearness*. Introduced (N. and Mid. Europe and Siberia).

G. PANICULATA, L. l. c. Perennial, glabrous and somewhat glaucous, 2 feet or more in height: leaves lanceolate, acute, 1–1½ inches in length: flowers very numerous in a compound panicle: segments of the calyx with conspicuous white scarious margins: petals scarcely exceeding the sepals: capsule nearly spherical. — Reichb. l. c. vi. t. 242. — Doubtfully established, Emerson, Manitoba, *Fowler*. (Adventive from Europe.)

4. SAPONARIA, L. SOAPWORT. (From *sapo*, soap; *S. officinalis* having been used as a substitute for soap, the juice being capable of forming a lather.) — A genus of the Old World including plants of diverse habit. Two rather coarse species belonging to different sections of the genus are spontaneous in America. — Gen. n. 365; DC. Prodr. i. 365; Benth. & Hook. Gen. i. 146.

S. VACCARIA, L. A smooth annual with ovate or oblong-lanceolate, sessile and somewhat connate leaves: flowers in a broad flat corymb: calyx ovoid, with 5 sharp herbaceous angles, the intervening parts being white and scarious: corolla rose-colored, destitute of appendages. — Spec. 409; Bot. Mag. t. 2290; Torr. & Gray, Fl. i. 195; also variously referred by authors to *Gypsophila*, *Lychnis*, or more often regarded as an independent genus, *Vaccaria*. — Railway ballast and cultivated ground, frequent and sometimes troublesome in wheatfields westward, where it bears the name of “cockle.” July–August. (Introduced from Europe.)

S. OFFICINALIS, L. (SOAPWORT, BOUNCING BET.) Perennial, smooth, 1½–2 feet high: leaves ovate-lanceolate, acute, 3-ribbed, 2–3 inches long, narrowed at the base; inflorescence terminal, somewhat pyramidal, the flowers clustered at the ends of short branches: calyx tubular, terete: petals appendaged at the junction of the claw and the

obovate retuse blade, white or pink, often double. — Spec. 408; Eng. Bot. xv. t. 1060; Pursh. Fl. 314; Torr. & Gray, Fl. i. 195. — Roadsides and waste ground, common; July to the end of October. (Naturalized from Europe.)

5. *SILENE*, L. CATCHFLY, CAMPION. (Name from Σειληνός, in reference to the viscid excretion of many species, the Greek god having been described as covered with foam; also derived directly from σίαλον, saliva.) — A large genus of attractive plants inhabiting chiefly the northern temperate parts of the Old World, but also well represented in North America, especially in the Pacific region, where it has lately been necessary to increase considerably the number of species. Although the members of the genus present considerable diversity of habit and floral characters, yet they do not fall into well marked groups and the elaborate subdivision of the genus suggested by Rohrbach cannot be satisfactorily carried out among our American species. — Gen. n. 372; Oth in DC. Prodr. i. 367; Torr. & Gray, Fl. i. 189; Fenzl in Ledeb. Fl. Ross. i. 303; Reichb. Icon. Fl. Germ. vi. t. 269–301; Benth. & Hook. Gen. i. 147; Rohrb. Monog. der Gatt. *Silene*; Wats. Proc. Am. Acad. x. 340, & Bibl. Index, 106.

* Annuals, mostly introduced.

— Inflorescence simply racemose, or subspicate; pedicels solitary.

S. GALLICA, L. Stem hirsute with white jointed hairs: leaves spatulate, obtuse, mucronate, hirsute-pubescent on both sides, 8–18 lines in length: racemes terminal, one-sided, 2–4 inches long: flowers more or less pedicellate: calyx 10-nerved, villous-hirsute, slender and subcylindric in anthesis, becoming in fruit broadly ovoid, with contracted orifice and short narrow spreading teeth: petals usually little exceeding the calyx; the blade obovate, somewhat bifid, toothed or entire. — Spec. 417; Cham. & Schlecht. Linnæa, i. 40; Rohrb. l. c. 96. *S. Anglica*, L. l. c. 416. — Apparently of European origin but now cosmopolitan; locally common on the Pacific slope from British Columbia to Lower California; occasionally in cultivated fields in the Atlantic States; April–July. The typical form has very short ascending pedicels and white or pink flowers. *S. LUSITANICA*, L. l. c. 416, is a form with the lower pedicels elongated, equalling or exceeding the calyx, and becoming horizontal in fruit. Tolon, Calif., *Brandeggee*. (Europe.)

Var. *QUINQUEVULNERA*, Koch. Petals more showy, subentire, deep crimson with a white or pink border. — Synop. Fl. Germ. et Helv. 100. *S. quinquevulnera*, L. l. c. 416. — With the typical form.

S. NOCTURNA, L., although credited to this country by Torr. & Gray and by various subsequent authors, is not represented from America in the leading herbaria of the country. Most if not all of the specimens referred here are either *S. Gallica* or *S. noctiflora*.

+ + Inflorescence dichotomously racemose.

S. DICHOTOMA, Ehrh. Tall, more or less hirsute and viscid: root annual or biennial: leaves lanceolate or oblanceolate: flowers short-pedicelled or subsessile, larger than in the preceding, $\frac{1}{2}$ inch in diameter: petals white or roseate, the blade obovate, more or less deeply bifid: calyx cylindric in anthesis, becoming ovate in fruit, the prominent green nerves strictly simple, hirsute. — Beitr. vii. 143. Reichb. l. c. vi. t. 280. — A European species somewhat intermediate between *S. Gallica* and *S. noctiflora*; ballast and waste land, Philadelphia, *Martindale*; Trenton, *Volk*; Texas, *Nealley*. The form *RACEMOSA*, Rohrb., *S. racemosa*, Otth in DC. Prodr. i. 384, with more pubescent leaves tending to be clustered about the base has been found by *Prof. Greene* sparingly introduced in fields about Berkeley, Cal. Fl. Francis. i. 116.

+ + + Inflorescence cymose or paniculate, not distinctly racemose.

++ Calyx equally and conspicuously 20-25-nerved.

S. multinervia, WATS. Erect, a foot high, pubescent throughout and somewhat viscid-glandular above: leaves narrowly oblong or linear, acute: inflorescence cymose with unequal branches: calyx ovate in fruit, contracted above, 5 lines long: petals small, purplish, unappendaged, not exceeding the subulate spreading calyx teeth: capsule narrowly ovate. — Proc. Am. Acad. xxv. 126; Zoc, i. 254. — Southern California, near Jamuel, *Orcutt*; island of Santa Cruz, *Brandegee*; Santa Monico Range, *Hasse*. This anomalous species is strongly characterized among indigenous *Silenes* by its many-nerved calyx, which places it in the Mediterranean § *Conosilene*. The California botanists are inclined to regard it as an introduced plant, and Davidson, in *Erythea*, i. 58, erroneously reduces it to *S. conoidea*, of the Old World, a species which differs in its larger flowers, longer and more attenuate calyx teeth, and long-necked flask-shaped capsules.

++ ++ Calyx 10-nerved.

= Viscid-pubescent or hirsute.

S. NOCTIFLORA, L. A coarse species a foot or two in height with lanceolate or ovate-lanceolate leaves 2-3 inches long: flowers usually few in loose cymes, fragrant: calyx large, in fruit ovoid, white with green nerves tending to anastomose: the teeth attenuate: petals bifid. — Spec. 419; Eng. Bot. v. t. 291; Torr. & Gray, Fl. i. 192; Gray's

Man. ed. 6, 85. — Roadsides and cultivated grounds, June to September. (Nat. from Eur.)

= = Smooth or nearly so, a part of each of the upper internodes glutinous.

S. antirrhina, L. (SLEEPY or SNAPDRAGON CATCHFLY.) Stem 6 inches to 3 feet in height: leaves oblong-lanceolate or linear, commonly acute: flowers rather numerous, small, ephemeral, borne in a compound cyme; pedicels long, filiform: calyx smooth, green, ovoid in fruit, about 4 lines long, contracted above; the teeth short: ovary scarcely stiped: petals small, pink or white, more or less emarginate or bifid. — Spec. 419; Oth in DC. Prodr. i. 376; Torr. & Gray, Fl. i. 191; Rohrb. l. c. 173; Mart. Fl. Bras. xiv. 2, t. 66. *Saponaria dioica*, Cham. & Schlecht. Linnæa, i. 38. — Waste places, common, widely distributed throughout the United States and Canada (also *S. Am.*); very variable in size and foliage.

Var. *linaria*, WOOD. "Very slender: leaves all linear except the lowest which are linear-spatulate; calyx globular. Ga. and Fla." — Wood, Class-Book, ed. of 1861, 256, & Bot. & Fl. 53; Wats. Bibl. Index, 107.

Var. *divaricata*. Very slender: leaves linear or lance-linear, not exceeding an inch in length: branches filiform divaricate: calyx ovoid, 2-2½ lines long; petals wanting. — Rockford, Ill., *M. S. Bebb*, *G. D. Swezey*.

S. ARMERIA, L. Leaves elliptic or ovate-elliptic: flowers borne at the ends of the branches in small close cymes: pedicels short: calyx slender, clavate, 6-8 lines long: ovary long-stiped: petals pink, subentire or minutely toothed; appendages lanceolate acute. — Spec. 420; Torr. & Gray, Fl. i. 194; Reichb. l. c. vi. t. 284. — Occasionally found on roadsides and in fields, having escaped from gardens.

* * Perennial, subcaulescent, very low and densely matted.

S. acaulis, L. (MOSS CAMPION.) Closely caespitose, an inch or two in height: leaves linear, crowded on the branching rootstocks: flowers small, 2-3 lines in diameter, subsessile or raised on naked curved peduncles 2-6 lines long: calyx narrowly campanulate, 2-3 lines long, glabrous; the teeth short, rounded: petals purplish, rarely white, entire, retuse or bifid, minutely appendaged. — Spec. ed. 2, 603; Reichb. Icon. Fl. Germ. vi. t. 270. *Cucubalus acaulis*, L. Spec. 415. *Lychnis acaulis*, Scop. Fl. Carn. ed. 2, i. 306. — An arctic and high alpine species, widely distributed and somewhat variable. Arctic America to the White Mts.; extending along the Rocky Mts. from Alaska to Arizona, also found in the Cascade Mts. (Eur. and Asia.) A some-

what caulescent form, with very slender elongated leaves 1-1½ inches in length, has been found in the Rocky Mountains of Colorado, *Miss Eastwood*, and Arizona, *Rothrock*. It is connected, however, with the typical form by gradual transitions.

* * * Caulescent perennials.

← Eastern and Southern species.

↔ Calyx inflated, flowers white or pink, scattered or panicked.

S. CUCUBALUS, Wibel. (BLADDER CAMPION.) Glaucons: stems ascending, a foot or more in height, leafy below, smooth or somewhat rough-pubescent: leaves opposite, usually lanceolate, acute: bracts much smaller: flowers polygamo-dieocious: calyx campanulate to subglobose, strongly inflated, glabrous, finely reticulated between the inconspicuous nerves: petals narrow, 2-cleft, scarcely crowned, white or pink. — Prim. Fl. Werth. 241; Rohrb. l. c. 84; Gray's Man. ed. 6, 84. *S. inflata*, Smith, Fl. Brit. ii. 467; Gray's Man. ed. 5, 89; Warming, Bot. Foren. Festschr. 1890, 258. *Cucubalus Behen*, L. Spec. 414. — Fields and roadsides, New Brunswick to Illinois. (Nat. from Europe.)

S. nivea, OTTH. Stem smooth or minutely pubescent above, 1½-3 feet in height: leaves opposite, lanceolate, attenuate-acuminate, smooth or pulverulent-pubescent: flowers rather few, nodding, borne in the forks of the branches: bracts foliar: calyx oblong in anthesis, fine-pubescent or smooth; nerves inconspicuous, anastomosing, the teeth short, triangular, obtuse: petals cuneate-obovate, bearing two short blunt appendages. — Otth in DC. Prodr. i. 377; Torr. & Gray, Fl. i. 190; Rohrb. l. c. 87. *S. alba*, Muhl. Cat. 45 (nomen subnudum). *Cucubalus niveus*, Nutt. Gen. i. 287. — Pennsylvania and Washington, D. C., to S. Illinois, Iowa, and Minnesota; rare.

S. stellata, AIT. (STARRY CAMPION:) Stems 2-3 feet high: leaves in whorls of 4 (the lowest sometimes opposite), ovate-lanceolate, acuminate, 2-3 inches long, half as broad: flowers in an open panicle: calyx campanulate, 4-5 lines in length; the teeth broad, acuminate: petals laciniately cleft, unappendaged. — Kew. ed. 2, iii. 84; Torr. Fl. N. Y. i. 100, t. 16. *Cucubalus stellatus*, L. Spec. 414; Sims, Bot. Mag. t. 1107. — Woodland, frequent, S. New England to Minnesota, southward to Virginia and Texas.

↔ ↔ Calyx not inflated, distended only by the enlarging capsule.

= Flowers white or rose-colored.

S. ovata, PURSH. Pubescent or smooth: stems several from the same root, 2-4 feet in height; leaves ovate to ovate-lanceolate, attenuate-acuminate, 3-5 nerved from the rounded base, sessile, subconnate, 3-5 inches long: flowers borne in a narrow terminal leafless panicle:

calyx tubular, 3-4 lines in length, 10-nerved: petals white, the blade dichotomously cleft into linear segments. — Fl. i. 316; Torr. & Gray. Fl. i. 190; Chapm. Fl. 51. *Cucubalus polypetalus*, Walt.? Car. 141. — Alluvial woods, uplands, North Carolina to Georgia and Alabama.

S. Baldwinii, NUTT. Villous: stems low, weak, decumbent, throwing out runners: lower leaves spatulate obtuse, with an attenuate base; the upper oblanceolate or lanceolate, acute: flowers few, very large, $1\frac{1}{2}$ inches or more in diameter, pedicellate, aggregated at the ends of the stems: calyx clavate, pubescent, 10 lines in length; the teeth ovate-lanceolate, acuminate: petals white or pink, the large obovate blade fringed, unappendaged. — Gen. i. 288; Torr. & Gray, Fl. i. 193; Chapman, Fl. 51. *S. fimbriata*, Bald. in Ell. Sk. i. 515, not of Sims. *Melandryum Baldwinii*, Rohrb. l. c. 231; Wats. Bot. King Exp. 431. — Georgia and Florida, March to May.

S. NUTANS, L. Stems slender, a foot or more in height, leaves mostly at the base, spatulate; the cauline small, lanceolate: flowers in a slender, little branched panicle, nodding, 6-7 lines in diameter: calyx cylindrical in anthesis, not exceeding 5 lines in length: petals white or rose-colored, bifid (rarely 4-fid), segments narrow: capsule large ovate-conical. — Spec. 417; Reichb. l. c. vi. t. 295. — Introduced on Mt. Desert, *Miss Minot*. (Europe and Siberia.)

S. Pennsylvanica, MICHX. (WILD PINK.) Viscid-pubescent: stems few or many, 6-9 inches high, from a strong tap-root: leaves mostly at the base, spatulate or oblanceolate, usually acutish at the apex, tapering below to long ciliated petioles; the two or three pairs of cauline leaves much shorter, lanceolate or narrowly oblong, acute: cymes small, terminal, dense, rarely more open: calyx clavate, purplish; the teeth short: petals white or pink, appendaged; the blade obovate, erose, 4-6 lines in length: the ovary long-stiped. — Fl. i. 272; Bot. Reg. iii. t. 247; Hook. Fl. Bor.-Am. i. 90; Gray, Gen. ii. 42, t. 115. *S. cheiranthoides*, Poir. Dict. vii. 176. *S. incarnata*, Lodd. Cab. t. 41. *S. platypetala*, Otth in DC. Prodr. i. 383. *Melandryum Pennsylvanicum*, Rohrb. l. c. 233, & Linnæa, xxxvi. 251. *S. Caroliniana*, Walt. Car. 142, with scarlet or crimson petals, and *S. rubicunda*, Dietr. Allg. Gartenzeit. iii. 196, with divided petals, are doubtful synonyms. — Open rocky woods, E. New England to S. Carolina and Kentucky.

= = Flowers crimson or scarlet, large.

S. Virginica, L. (FIRE PINK, CATCHFLY.) Viscid-pubescent: stem striate, single, simple, 1-2 feet high: leaves spatulate or oblanceolate; the lower ones narrowed to ciliate-fringed petioles; the upper

lanceolate, sessile: flowers very large, an inch or more in diameter, loosely cymose; the central ones commonly nodding or reflexed after anthesis: calyx clavate or oblong, 8 lines in length, becoming obovate in fruit: petals crimson; the blade broadly lanceolate, 2- (rarely 4-) toothed at the apex. — Spec. 419 in part, not Willd.; Bot. Mag. t. 3342; Torr. & Gray, Fl. i. 192; Chapm. Fl. 51. *S. Catesbæi*, Walt. Car. 142. *S. coccinea*, Moench, Meth. Suppl. 306. — Common in open woods, on rocky hills, W. New York, S. W. Ontario (acc. to *Macoun*) to Minnesota (acc. to *Upham*), southward to Georgia and Arkansas.

S. rotundifolia, NUTT. (ROUND-LEAVED CATCHFLY.) Viscid-pubescent: stems weak, decumbent, branched: leaves rather large, varying from broadly lanceolate to subrotund, rather abruptly pointed; the lower ones contracted at the base to winged petioles: flowers large, showy, scattered or in loose cymes: calyx tubular, 10-13 lines in length, abrupt at the base, becoming clavate but not obovate in fruit: petals bright scarlet; the blade 8 lines in length, deeply bifid; the lobes more or less toothed: seeds smaller, smoother, and darker colored than in the preceding. — Gen. i. 288; Otth in DC. Prodr. i. 383; Torr. & Gray, Fl. i. 192. *Melandryum rotundifolium*, Rohrb. Monog. Sil. 234, & Linnæa, xxxvi. 257; Wats. Bot. King Exp. 431. — S. Ohio (acc. to Nuttall), Kentucky, and Tennessee, June to August.

S. regia, SIMS. (ROYAL CATCHFLY.) Viscid-glandular above, finely pulverulent-pubescent below: stems tall, erect, rather rigid, simple or sparingly branched, leafy: leaves ovate, acuminate, 3-7-nerved from the rounded sessile base; the lowest more or less contracted below: flowers showy, in a narrow oblong panicle: calyx cylindrical, 10-12 lines long, becoming somewhat spindle-shaped in fruit: petals spatulate-lanceolate, subentire, scarlet. — Bot. Mag. t. 1724; Sweet's Brit. Fl. Gard. new ser. t. 313; Torr. & Gray, Fl. i. 193. *S. Virginica*, form, Michx. Fl. i. 272. *Melandryum regium*, A. Br. Flora, 1843, 372; Rohrb. Linnæa, xxxvi. 250. — Prairies, Ohio to Alabama and westward to Missouri, not abundant.

← ← Rocky Mountain and Pacific species.

↔ Flowers large, rather few, scattered: calyx cylindrical or clavate in anthesis, 8-12 lines long: corolla (except in *S. Parishii*) usually more than 10 lines in breadth; petals 4- ∞ -cleft, very rarely bifid: stems leafy.

= Seed-coat more or less roughened but firm.

a. Corolla deep red.

S. laciniata, CAV. Finely pubescent: root narrowly fusiform: stems erect or decumbent, somewhat rigid, knotty below; the branches

ascending: leaves lanceolate to narrowly linear, scabrous, ciliolate, narrowed to a sessile base: flowers terminal on the branches: calyx subcylindric or clavate even in fruit, 10 lines in length: petals bright scarlet, 4-cleft or very rarely bifid: capsule oblong scarcely at all ovate, commonly exserted at maturity. — Icon. vi. 44, t. 564; Lindl. Bot. Reg. xvii. t. 1444; Gray, Pl. Wright. ii. 17; Wats. Proc. Am. Acad. x. 341. *S. pulchra*, Torr. & Gray, Fl. i. 675 in part. *S. speciosa*, Paxt. Mag. of Bot. x. 219. *S. simulans*, Greene, Pitt. i. 63. *Lychnis pulchra*, Cham. & Schlecht. Linnæa, v. 234.— Central California to New Mexico. (Mex.)

Var. *Greggii*, Wats. Leaves oblong-lanceolate to ovate, otherwise not differing essentially from the type. — Proc. Am. Acad. x. 341, & Bibl. Index, 108. *S. Greggii*, Gray, Pl. Wright. ii. 17. *Melandryum laciniatum*, var. *Greggii*, Rohrb. Monog. Sil. 232. *Melandryum Greggii*, Rohrb. Linnæa, xxxvi. 256. — New Mexico, Wright, Thurber, Matthews; Arizona, Buckminster, Lemmon. (Mex., Gregg.)

S. Californica, Durand. Root simple, strong, penetrating vertically to a depth of 2–3 feet: stems several, procumbent or suberect, leafy: leaves lanceolate or ovate elliptic, more or less narrowed to the base, acuminate, rarely obtusish: corolla more than an inch broad; petals variously cleft, most commonly with two broad lobes flanked by two narrower ones: capsule ovoid, concealed until dehiscence by the rather broad calyx. — Pl. Pratt. 83; Brew. & Wats. Bot. Calif. i. 64. *S. pulchra*, Torr. & Gray, Fl. i. 675 in part. *S. Virginica*, Benth. Pl. Hartw. 299. *S. laciniata*, var. *Californica*, Gray, Proc. Bost. Soc. vii. 146; Wats. Proc. Am. Acad. x. 341. *S. Tilingi*, Regel, Act. Hort. Petrop. i. 99. *Melandryum Californicum*, Rohrb. Linnæa, xxxvi. 252.— Coast Mts. of Currie Co., Oregon (*Howell*), southward through N. and Central California to Ft. Tejon (*Xanthus*), and perhaps farther. Subject to much variation in foliage, the following being perhaps the best marked of the varieties.

Var. *subcordata*. Leaves ovate, suborbicular, shortly acuminate, closely sessile by subcordate bases. — Blue Cañon, Kellogg (1870), Brandegee (1888).

b. Corolla white or nearly so.

S. Wrightii, Gray. Very glutinous: rootstock thick, ligneous: stems several, ascending, a foot or more in length, branching, leafy: leaves lanceolate, acuminate, $1\frac{1}{2}$ –2 inches long, sessile; the lower attenuate below: calyx teeth filiform-attenuate, nearly half as long as the tube: petals white, 4-cleft; the lobes somewhat toothed: capsule on a stipe of nearly its own length. — Pl. Wright. ii. 17; Wats. Bibl.

Index, 110. *Melandryum Wrightii*, Rohrb. Linnæa, xxxvi. 253; Wats. Bot. King Exp. 431. — Mountain sides near the copper mines, New Mexico, *Wright* (862).

S. Hookeri, NUTT. Covered above with a fine grayish pubescence: root single, stout: stems several, short, slender, decumbent: leaves oblanceolate, rather numerous and approximate, 2–3 inches in length, acute or obtusish: flowers very large: calyx teeth acute, but not filiform: petals 4-cleft, white or pink. — Nutt. in Torr. & Gray, Fl. i. 193; Bot. Mag. t. 6051; Fl. d. Serres, t. 2093; Wats. Proc. Am. Acad. x. 341; Brew. & Wats. l. c. i. 64. *S. Bolanderi*, Gray, Proc. Am. Acad. vii. 330, & viii. 378; Bolander, Cat. 6. *Melandryum Hookeri*, and *M. Bolanderi*, Rohrb. l. c.; Wats. Bot. King Exp. 431. — Woodlands, W. Oregon and N. W. California.

= = Seed-coat vesicularly roughened, or crested.

S. Parishii, WATS. Grayish pubescent: root simple, thick, with a branching rootstock: stems several, decumbent, a span long: leaves lanceolate, acuminate, sessile, 1–2 inches long; the lower oblanceolate: flowers aggregated at the ends of the branches: calyx tubular, narrowed below, an inch long, with narrow subulate teeth 3–4 lines in length: petals narrow, scarcely exerted from the calyx, cleft into 4 or more filiform segments: seeds doubly crested with short vesicular hairs. — Proc. Am. Acad. xvii. 366. — San Bernardino Mts., California, *S. B. & W. F. Parish*.

++ ++ Flowers smaller, not ordinarily exceeding 6–8 lines in diameter.

= Flowers borne in the forks of the branches forming a leafy inflorescence: calyx oblong or campanulate: leaves lanceolate or ovate.

S. campanulata, WATS. Finely glandular-pubescent: root thick, simple: rootstock branching, somewhat woody: stem slender, erect, leafy: leaves sessile, lanceolate: flowers on short deflexed peduncles: calyx green, broadly campanulate, reticulate-veined, toothed nearly to the middle: petals narrow; the limb cleft into 4 or more flesh-colored segments: capsule globular, 3–4 lines in diameter. — Proc. Am. Acad. x. 341; Brew. & Wats. l. c. i. 63. — Mountainous districts of N. California and S. Oregon.

Var. (?) *Greenei*, WATS. ined. More pubescent throughout: leaves ovate: petals greenish white. — Yreka, Calif., *Greene*; Cañonville and Wolf Creek, Oregon, *Howell Brothers*; Ashland, Oregon, *Henderson*. Apparently the commoner form.

S. Menziesii, HOOK. Finely glandular-pubescent: stems weak, leafy, dichotomously branched above, 6 inches to a foot or more in

height : leaves ovate-lanceolate, acuminate at each end, thin : flowers very small : calyx obconical, obovate, or oblong, only $2\frac{1}{2}$ –4 lines in length : petals white, 2-cleft, commonly but not always unappendaged : capsule $1\frac{1}{2}$ –2 lines in diameter. — Fl. Bor.-Am. i. 90, t. 30 ; Torr. & Gray, Fl. i. 193 & 676 ; Rohrb. Monog. Sil. 147. *S. stellarioides*, Nutt. in Torr. & Gray l. c. i. 193. *S. Dorrii*, Kellogg, Proc. Calif. Acad. iii. 44, f. 12. — From Colorado to Vancouver Isl., S. California, and New Mexico.

= = Flowers few, rather small, white or nearly so, nodding, borne in a lax naked panicle : petals cleft into four or more narrowly linear, almost filiform segments : styles long-exserted : leaves small, lanceolate, chiefly clustered upon the more or less cespitose base.

S. longistylis, ENGELM. Hoary-pubescent, minutely glandular above : root single : rootstock branched : stems 2–several, slender, 6–12 inches high, bearing 3–6 loosely paniculate or subracemose heads : leaves linear-lanceolate or oblanceolate, acute : calyx soon becoming ovoid : petals with a spatulate very pubescent, scarcely or not at all auriculate claw ; the blade divided into 4 linear filiform segments ; appendages linear, entire : capsule subsessile : seeds (apparently mature) small, dark red. — Engelm. in herb. Wats. Proc. Am. Acad. xxii. 469. — Scott's Mts., N. California, *Engelmann* ; Ashland Butte, S. W. Oregon, *Henderson* ; specimens collected in Plumas Co., Cal. (*Mrs. Austin*), and Mariposa Co. (*Congdon*), probably belong here also.

S. Lemmoni, WATS. Similar in habit : leaves broader, lanceolate, quite smooth or somewhat pubescent and glandular : calyx inclined to be herbaceous, especially the lanceolate acutish teeth, but the veins from the different nerves seldom anastomosing with each other : petals with a rather broad villous auriculate claw ; the four divisions of the blade linear but not filiform : capsule nearly sessile : seeds red, somewhat irregular in shape, 1 line in length. — Proc. Am. Acad. x. 342 ; Brew. & Wats. l. c. i. 64. — California, Sierra Co., *Lemmon* ; Janesville, *Brandegee* ; Mariposa Co., *Congdon* ; Coast Mts. north of San Francisco, *Rattan*. This species is too near the preceding and following, and it is not unlikely that more abundant material may show intergradation between them.

S. Palmeri, WATS. Similar in habit, more or less pubescent throughout, finely glandular above : leaves oblanceolate : calyx teeth commonly short and blunt, scarcely herbaceous ; the base of the calyx often contracted about the short but distinct stipe of the ovary : the petals purplish ; the claw villous, narrowly or broadly spatulate but

not auriculate; the limb deeply 4-cleft; the segments entire or bifid: seeds large for the genus, tuberculate, ash-colored at maturity. — Proc. Am. Acad. xi. 124; Brew. & Wats. l. c. i. 65. — S. California, Cucamaca Mts., *Palmer*; San Bernardino Mts., *Parish*; San Rafael Mts., *Ford*.

= = = Inflorescence as in the preceding: petals 2-cleft into linear segments: styles very long, the exserted portion as long as the calyx.

S. Bridgesii, ROHRB. Pubescent and viscid: stems leafy, usually simple up to the inflorescence, a foot or more in height: leaves sessile, lanceolate, acute, $1\frac{1}{2}$ –2 inches long: flowers slender-pedicelled, verticillately racemose or somewhat paniculate, nodding: calyx narrowly oblong or clavate in anthesis, broadly obovate in fruit; the teeth acute; the principal nerves broad, green; the commissural much narrower, seldom anastomosing with the others: petals $\frac{1}{2}$ – $\frac{3}{4}$ inch long, considerably exserted, white or purplish: seeds very large, finely tuberculate, red. — App. Ind. Sem. Berol. 1867, 5, & Monog. Sil. 204; Wats. Proc. Am. Acad. x. 342; Brew. & Wats. l. c. i. 66. *S. incompta*, Gray, Proc. Am. Acad. vii. 330 = *S. Engelmanni*, Rohrb. Linnæa, xxxvi. 264, is a form of the same species, differing from the type only in the somewhat broader lobes of the petals and in the obtuse appendages. — Yosemite Valley, *Bridges, Gray*; Mt. Bullion, *Bolander*; Danah, *Congdon*. A closely similar if not identical plant has been found by *Rattan* on the Klamath River in N. California.

= = = = Flowers scattered, or variously paniculate: styles included or somewhat exserted, but not so long as in the preceding.

a. Fruiting calyx ovate, not contracted below, filled and distended by the sessile capsule.

S. Thurberi, WATS. Densely grayish-pubescent and glandular: stems erect, 2 feet high, somewhat rigid, with ascending branches: leaves lanceolate, acute, contracted below, sessile, 2–4 inches long: flowers small, rather numerous: calyx cylindric becoming narrowly ovate, green-and-white striped, densely pubescent; the teeth slender with fimbriate laciniate margin: petals white, little exceeding the calyx; the claw rather broad with upwardly produced auricles; blade bifid with short oblong lobes, each with a small lateral tooth; appendages oblong, obtuse: capsule narrowly ovoid, scarcely stiped: seeds tuberculate and distinctly crested. — Proc. Am. Acad. x. 343. *S. plicata*, Wats. l. c. xvii. 366. — Near Janos, S. W. New Mexico, *Thurber*; peak south of Rucker Valley, *Lemmon*. (Mexico, *Pringle*.)

S. pectinata, WATS. Stems several, erect, $1\frac{1}{2}$ – $2\frac{1}{2}$ feet high: leaves lanceolate or oblanceolate, acute or acuminate; the lower long, tapering into winged petioles; the upper more or less reduced: flowers

purplish rose-colored, 6–8 lines broad: calyx becoming ovate in fruit: the teeth lance-linear to filiform, elongated, usually exceeding the mature capsule: petals with a narrow claw destitute of auricles; the blade obovate, bifid; the lobes rounded; the appendages lanceolate, entire: capsule large, ovate. — Proc. Am. Acad. x. 344; Brew. & Wats. Bot. Calif. i. 65. — Plumas Co., Calif., *Mrs. Ames*; Sierra Co., *Lemmon*; Carson City, Nev., *Anderson*. The typical form is very viscid glandular and somewhat branched.

Var. *subnuda*. Scarcely viscid: stems subsimple: radical leaves almost smooth, the cauline much reduced. — Near Empire City and at Franktown, Nev., *M. E. Jones*.

b. Capsule distinctly stiped: calyx relatively narrow, cylindric or in fruit clavate or obovate and usually rather distinctly contracted about the stipe of the capsule.

1. Petals 4 (– ∞)-fid.

S. Oregana, WATS. Finely pubescent and very viscid, fetid: stems 1–several, erect, simple up to the racemiform or rather densely cymose-paniculate inflorescence: the lower leaves oblanceolate, narrowed below to long petioles; the upper leaves lanceolate or lance-linear, sessile: petals white with spatulate claws, glabrous, distinctly auricled at the summit; the blade 2–3 lines long, variously cleft into 4–6 or more linear segments: the stipe of the ovoid capsule about 2 lines long. — Proc. Am. Acad. x. 343; Brew. & Wats. l. c. i. 65. — Mountains of Oregon, Washington, and Montana, April to August.

S. montana, WATS. Finely pubescent: stems erect from a more or less decumbent base, 4–14 inches high: leaves lance-linear or narrowly oblanceolate, acuminate, 1–2½ inches in length; the cauline 3–4 pairs: inflorescence varying from subspicate to paniculate; flowers rarely solitary: calyx 6–9 lines in length: petals greenish white to rose-colored, exserted 2–4 lines: ovary long-stiped: capsule acutish. — Proc. Am. Acad. x. 343. — Near Carson City, Nev., *Anderson*; Sierra Co., Cal., *Lemmon*. *S. Shockleyi*, Wats. l. c. xxv. 127, from the White Mts., Mono Co., Cal., is apparently only a high-mountain form of the same species.

Var. *rigidula*. Stems simple, a span high, slightly rigid: leaves short, less than an inch in length, thickish and stiff: flowers white, subspicate. — Franktown, Nev., *M. E. Jones*, 1882.

S. occidentalis, WATS. Viscid-glandular, 2 feet high: stems one or two from a single strong root, branched above: leaves lanceolate or oblanceolate, 2–3 inches long: flowers in a very loose open panicle: calyx elongated, cylindric becoming clavate in fruit: petals purple,

4-cleft into lanceolate segments; the blade narrowed gradually into the cuneate claw, the latter devoid of auricles; appendages linear: capsule oblong, upon a stipe 2 lines in length. — Proc. Am. Acad. x. 343; Brew. & Wats. l. c. i. 64. — Calif., *Bolander*, without special locality; Plumas Co., Calif., *Lemmon*, *Mrs. Austin*; Butte Co., *Mrs. Bidwell*.

2. Petals bifid, each lobe sometimes bearing a very small lateral tooth.

S. purpurata, GREENE. "Stems numerous, from slender running rootstocks, 6–18 inches high, rather slender: whole plant pubescent and slightly viscid: leaves rather remote, linear-lanceolate, acute, $1\frac{1}{2}$ inches long: flowers in terminal and subterminal peduncled or sessile cymes of about 3: calyx purple, rugose-veiny, clavate, not inflated, $\frac{1}{2}$ inch long or more; limb of petals more than half as long, white or pink, obcordate or bifid, appendaged at base." — This species, not seen by the author, appears to be near *S. Scouleri*, Hook. The description is drawn from Pittonia, ii. 229. — Porcupine River, interior of N. Alaska, *J. H. Turner*.

S. verecunda, WATS. Low, 6–12 inches in height, finely pubescent below, glandular-viscid above: stems several, leafy especially near the base: leaves narrowly lanceolate or oblanceolate to linear, acute: flowers rather few, mostly terminal or subterminal; the branches of the inflorescence erect: calyx soon becoming strongly obovate by the development of the broad ovoid capsule: calyx teeth with membranous ciliated margins: petals rose-colored; the claw glabrous, narrowly auricled; the blade 2-cleft into short entire oblong segments; appendages oblong, blunt and somewhat toothed at the apex. — Proc. Am. Acad. x. 344; Brew. & Wats. l. c. i. 65. *S. Engelmanni*, var. *Behrii*, Rohrb. Linnæa, xxxvi. 264. — Central California near the coast, Mission Dolores, San Francisco.

S. Luisana, WATS. Taller, finely pubescent: stems several from a branching caudex, erect, slender, viscid above: leaves narrowly oblanceolate to linear, acute, most numerous at the base; the cauline gradually reduced: flowers borne upon short spreading peduncles: fruiting calyx clavate; teeth long and narrow, with an incurved membranous ciliated margin: petals white, with narrowly auricled glabrous claw, and 2-cleft blade; segments linear-oblong, entire or with a small lateral tooth; appendages lanceolate, often toothed: capsule cylindric. — Proc. Am. Acad. xxiii. 261. — California, San Luis Obispo, *J. G. & S. A. Lemmon*; near Tolon, *Brandegge*; mountains south of Ft. Tejon, *Coville & Funston*.

S. platyota, WATS. Minutely pubescent throughout, glandular above: root thick: stems slender, $1\frac{1}{2}$ feet high: leaves oblanceolate,

acute, narrowed below to winged ciliated petioles: inflorescence branched; flowers borne singly, or in the stronger individuals somewhat fascicled at the ends of the branches: calyx clavate in fruit, with broad green nerves; teeth acutish with membranous ciliated margins: mature capsule short, oblong, not exceeding 2 lines in diameter: the petals greenish white or roseate; claws villous toward the base, with broad entire or toothed auricles above; the blade bifid; the short oblong lobes with or without small lateral teeth; appendages lance-oblong. — Proc. Am. Acad. xvii. 366. — S. California, Cuyamaca Mts., *Palmer, Cleveland*; San Bernardino Mts., *Lemmon, Parish Bros., Wright*. San Jacinto Mts., *Parish Bros.* (Lower Calif.) A very dwarf specimen apparently of this species from San Bernardino Mts., 11,000 ft. (*W. G. Wright*), has purplish petals and a calyx with blunter teeth and less prominent veins.

S. Sargentii, WATS. Cespitose, minutely pubescent: stems numerous, slender, erect, 6 inches high: leaves linear or nearly so, 1 to nearly 2 inches long, a line or so in breadth; the radical crowded, covering the rootstock with their slightly enlarged and imbricated bases; the cauline 2–3 pairs: calyx cylindrical, 7 lines long; teeth short: the petals white or pink; the claws exerted, with broad laciniately cleft auricles; the blade short, obovate, bifid; the segments each bearing a small lateral tooth: capsule well stiped, cylindrical, and very slender, at maturity scarcely more than a line in diameter: seeds tuberculate-crested, smooth on the faces. — Proc. Am. Acad. xiv. 290. — Table Mountain, Monitor Range, N. Nevada, *C. S. Sargent*.

c. Calyx broader, oblong, campanulate or rarely obovate, rather loosely surrounding the ovary, sometimes narrowed downward but not distinctly contracted about the carpophore.

1. Petals divided into 4 nearly equal segments: appendages fringe-toothed.

S. Bernardina, WATS. Covered with a fine grayish pubescence below, finely glandular above: caudex branching: stems several, slender, erect, 8–12 inches high, furrowed, 1–5-flowered: leaves grass-like, narrowly linear, 1-nerved, acute: terminal flower developing first, the lower ones borne upon branches $1\frac{1}{2}$ –2 inches long: buds acute: calyx green-nerved; the teeth lanceolate acutish, with membranous ciliated margin: petals white with rather short blade; the claw with broad lacinate auricles; appendages 4, long; the inner ones broad and toothed: capsule moderately stiped. — Proc. Am. Acad. xxiv. 82. — On shady slopes, Long Meadow, Tulare Co., Calif., *Palmer*.

2. Petals bifid; each segment with or without a smaller lateral tooth.

1* Low, 3-8 inches in height.

S. Grayii, WATS. — Cespitose, minutely pubescent and glandular: rootstock elongated, much branched: stem simple, erect, 4-6 inches high, 1-5-flowered; leaves short, oblanceolate or spatulate, slightly fleshy, 4-8 lines in length, the radical numerous, crowded; the cauline about 3 pairs: calyx broadly cylindrical: the teeth rounded; petals pink, with blade deeply bifid, and segments each bearing a lateral tooth; claw narrowly auricled: capsule short ovoid, scarcely stiped. — Proc. Am. Acad. xiv. 291; Robinson, Bot. Gaz. xvi. 44, t. 6. — Mt. Shasta above the timber line and near snow, *Brewer, Hooker & Gray, Packard, Pringle*. Specimens collected on Mt. Rainier by *E. C. Smith*, and having somewhat longer leaves, may be doubtfully referred to this species.

S. Watsoni. Finely glandular above, minutely pubescent, nearly smooth below: stems many, cespitose from a multicapital caudex, erect, very slender, simple, 4-8 inches in height, bearing 1-3 (rarely 5) flowers: leaves linear or very narrowly oblanceolate, acute, dark green; the radical numerous, an inch in length, seldom exceeding a line in breadth: the slender petioles expanding at the base, closely imbricated and connate by scarious membranes: calyx ovate or somewhat obovate, 5-6 lines in length, with purple more or less anastomosing nerves; the teeth with membranous margins: petals white or rose-colored: the blade short, a line in length, bifid; each segment usually bearing a short lateral tooth; appendages obtuse: styles ordinarily 3, rarely 4. — *Lychnis Californica*, Wats. Proc. Am. Acad. xii. 248. — California, near Ebbett's Pass, *Brewer*; Mt. Dana, *Bolander*; Sierra and Plumas Cos., *Lemmon*. As in *S. Lyallii*, the anthers are often infested by *Ustilago antherarum*, and in consequence enlarge and turn purple.

S. Suksdorfii, ROBINSON. Low, densely matted, alpine: stems 2-3 (rarely 4-5) inches high, simple 1-3-flowered, minutely pubescent below, glandular above: stem leaves about 2 pairs, linear, 3-7 lines long, a line wide; radical leaves numerous, crowded, similar or somewhat spatulate: calyx broadly cylindric or campanulate, seldom exceeding 5 lines in length; nerves conspicuous, simple below, anastomosing above: petals white, little exceeding the calyx, shallowly bifid; lobes entire; appendages oblong, retuse: stipe of capsule $1\frac{1}{2}$ lines long. — Bot. Gaz. xvi. 44, t. 6. — California to Washington, Mt. Stanford, *Hooker & Gray*; Mt. Paddo, *Suksdorf*; Mt. Hood *Howell*; Mt. Stewart, *Brandeggee*; Mt. Rainier, *Piper*.

2* Taller.

S. Lyallii, Wats. Very finely puberulent or quite smooth: stems numerous from a much branched matted base, leafy: leaves thin, narrowly oblanceolate, acute, only $1-1\frac{3}{4}$ inches long, 2 lines broad: inflorescence considerably branched in the type: calyx varying with age from subturbinate to inflated campanulate, 4 lines long: petals dark purple, bifid with subentire lobes: anthers large, purple. — Proc. Am. Acad. x. 342. — Cascade Mts., Lat. 49° , *Lyall*; Sierra Co., Cal., *Lemmon*; Summit Camp, Cal., *Kellogg*. This doubtful species is to be distinguished from some forms of *S. Douglasii* only by its smaller flowers, more leafy habit, and darker petals. All the specimens at hand, including the type, are diseased and apparently sterile, the ovaries remaining undeveloped, and the anthers having been attacked by a fungus (*Ustilago antherarum*), to which their large size and dark color are probably due.

S. Douglasii, Hook. Finely pubescent, scarcely viscid: stems very slender, usually decumbent and geniculate at the base: leaves remote, long, linear to narrowly lance-linear, attenuate to each end, spreading, 2–3 lines long, 1–2 lines wide: flowers borne mostly in 3-flowered, long-peduncled cymes: calyx oblong or obovate, rather narrow at the base; the ends of the teeth surrounded by an ovate obtuse inflexed membrane: petals white or pink, 2-lobed; segments obtuse; claw moderately auricled; appendages oblong, obtuse: capsule narrowly cylindrical, 5 lines long; teeth recurved; stipe $1\frac{1}{2}$ lines long. — Fl. Bor.-Am. i. 88; Torr. & Gray, Fl. i. 190; Wats. Bot. King Exp. 36, 431, & Proc. Am. Acad. x. 341; Brew. & Wats. Bot. Calif. i. 66. *Cucubalus Douglasii*, Eat. Man., ed. 7, 266. — Wahsatch Mts., Utah to Central California, northward to Montana and Brit. Columbia; June to September. A common and polymorphous species, of which the following are the chief varieties; all of them tending to intergrade with the type, and separated from it and each other by no constant or important floral character.

Var. multicaulis. Grayish-tomentulose and less glandular: the leaves more approximate, narrowly lanceolate or oblong, taper-pointed, erect: stems more rigid. — *S. multicaulis*, Nutt. in Torr. & Gray, Fl. i. 192. *S. Drummondii*, var. Torr. & Gray, Fl. i. 675. — "Oregon," *Nuttall*; Washington, Yakima Co., *Brandegee* (655 in part); *Klickitat*, *Howell*; Spokane Co., *Suksdorf*, *Ramm*; N. Idaho, *Spalding*, *Sandberg* (342); Montana, *Scribner*, *Canby*.

Var. Macounii. Minutely pubescent, somewhat glandular above: leaves distant, long and narrow, short-pointed, tapering very gradually

from near the apex to the base: calyx oblong, rather short, 4-5 lines in length, narrow, teeth purple-tipped: styles in specimens studied 3-4, very rarely 5. — *S. multicaulis*, Macoun, Cat. Canad. Pl. 494. *S. Macounii*, Wats. Proc. Am. Acad. xxvi. 124; Macoun, Bot. Gaz. xvi. 286. — Washington, *Lyall*, *Brandeggee* (655 in part); British Columbia, summits of Rocky and Selkirk Mts., *Macoun*, *Dawson*.

Var. macrocalyx. Tall, puberulent or nearly smooth: leaves narrowly lanceolate or linear, attenuate both ways: calyx long, cylindrical, 7-8 lines in length. — Humboldt Mts., W. Nevada, *Watson*; Mt. Adams, Washington, *Suksdorf*, *Howell*.

Var. viscida. Glandular viscid, especially above: stems erect, rigid, mostly simple from a branched slightly woody base: calyx broadly oblong or almost campanulate, relatively short: leaves narrowly lanceolate to linear-oblong, thickish. — British Columbia, at Kicking Horse Pass, *Macoun*; Washington, Yakima Region, *Brandeggee*; Olympic Mts., *Piper*.

Var. brachycalyx. Puberulent, not viscid; leaves distant, spreading, narrowly oblanceolate, attenuate: calyx short and broad, campanulate. — Oregon, Multnomah Co., 1877, *Howell*; also by same collector on Sauvie's Island, 1880.

Var. monantha. Nearly or quite smooth: stems very slender and weak, rising from a spreading much branched base: leaves thin, lanceolate or linear-oblong, and grass-like, narrowed both ways: flowers solitary, terminal, or 3-5 loosely cymose: calyx oblong-campanulate, inflated. — *S. monantha*, Wats. Proc. Am. Acad. x. 340; Brew. & Wats. l. c. i. 63. — Cascade Mts., Washington, *Harford & Dunn*; Webber Lake, Cal., *Lemmon*; N. Utah (?), *C. C. Parry*.

S. scaposa. Finely puberulent, somewhat viscid above: stem erect, subsimple, almost naked, 1-1½ feet high, rather rigid: radical leaves thickish, oblanceolate, acute, 3-nerved, somewhat glaucous, 2-3 inches in length, 3-5 lines broad; cauline leaves reduced to 1 or 2 pairs of distant bracts: inflorescence a narrow rigid panicle: flowers small, erect: calyx oblong or elliptic in outline, with simple green nerves: petals white, scarcely exceeding the calyx; the blade short, retuse; the claw with somewhat saccate auricles; appendages short obtuse: ovary shortly stiped. — Oregon, Blue Mts., *R. D. Nevius*, 1874; Cold Camp (355) and Currant Creek, *Thos. Howell*, 1885, May.

= = = = Inflorescence denser, subspicate, or forming an elongated thyse: styles included or moderately exserted.

S. Hallii, Wats. Stems several, from a stout root, simple, densely glandular-pubescent, 6 inches to 1½ feet high: leaves oblanceolate,

acute, tapering to the base, the midrib prominent below: flowers verticillately spicate, nodding: calyx even in anthesis broad, oblong or campanulate becoming obovate, strongly marked with purple or green nerves; those at the commissures irregularly anastomosing with the others and frequently double; the teeth triangular, acute, with membranous incurved margins: petals purple, not greatly exceeding the calyx; the claw very broad, laterally ciliate; the blade short, bifid; segments somewhat oblique, often toothed: capsule ovate on a short stipe. — Proc. Am. Acad. xxi. 446. *S. Scouleri* of various authors, not of Hooker; thus Gray, Am. Journ. of Sci. ser. 2, xxxiii. 405, & Proc. Philad. Acad. 1863, 58; Porter & Coulter, Fl. of Col. 12; Wats. l. c. x. 342 in part; Coulter, Man. of Rocky Mountain Bot. 32 in part. — Alpine regions of Colorado, *Hall & Harbour*, *Greene*, *French*, *Brandegge*, *Patterson*; a doubtful specimen from Arizona, *Knowlton*. August and September.

S. Scouleri, HOOK. Pubescent, glandular-viscid above: root stout: stems simple, $1\frac{1}{4}$ – $2\frac{1}{2}$ feet high: leaves narrowly oblanceolate or lance-linear, acuminate, not at all warty: inflorescence 6–8 inches long, verticillately spicate, or the lower flowers borne upon short appressed cymes: calyx clavate; nerves definite, but anastomosing above; teeth short with a broad membranous margin, ciliate: petals white or purplish; the claw with rather narrow, slightly laciniate auricles; the blade bifid; segments emarginate or toothed; appendages blunt: stipe of capsule 2 lines long. — Fl. Bor.-Am. i. 88; Torr. & Gray, Fl. i. 191; Rohrb. Monog. Sil. 213. *S. Drummondii*, Gray, Proc. Am. Acad. viii. 377. *Elisanthe Scouleri*, Ruprecht, Fl. Cauc. i. 200. — Frequent in mountainous districts of Oregon and Idaho to Vancouver Isl. and "Northwest Coast," *Menzies*; Colorado, *Brandegge*. July and August.

S. Pringlei, WATS. Habit, inflorescence, and calyx of the last: leaves very long, usually narrow and attenuate, both surfaces roughened, especially in the older leaves, with fine warts: petals purplish, bifid; segments each bearing a lateral tooth; auricles rather broad; appendages saccate: capsule ovate-oblong, well stiped. — Proc. Am. Acad. xxiii. 269. — Mt. Graham, Arizona, *Rothrock*; New Mexico, *Greene*. (Chihuahua, *Pringle*.)

S. Spaldingii, WATS. Viscid-tomentose: stems several, knotty, a foot high, very leafy: branches appressed or ascending: leaves lanceolate, sessile, $1\frac{1}{2}$ –2 inches long: flowers subspicate or appressed cymose-paniculate: calyx in fruit obconical, more herbaceous than usual in the genus, net-veined nearly to the base; teeth rather large, triangular-lanceolate, acutish: the petals greenish white, not exceeding

the calyx; the claw broadly auricled; the blade bifid, very short indeed, scarcely surpassing the four small appendages: capsule ovate-oblong, moderately stiped. — Proc. Am. Acad. x. 344. — On the Clear Water, Central Idaho, *Spalding*; on the Lumnaha, Union Co., Oregon, *Cusick*. September.

6. **LYCHNIS**, Tourn. COCKLE. (Name ancient, from *λύχνος*, a lamp, in reference to the bright color of certain European species.) — Herbs, chiefly of Europe and Asia, much resembling various species of *Silene*, and sometimes distinguished only by the number of the carpels. — The latter being in a few cases variable, the separation of the two genera is rather arbitrary. The indigenous species are Western or Arctic (*L. alpina* extends eastward and southward to Lower Canada), but several introduced European species have become more or less common in the Atlantic and Middle States, and in Canada. — Inst. i. 333, t. 175; DC. Prodr. i. 385; Torr. & Gray, Fl. i. 194; Endl. Gen. 972–974; A. Braun, Flora, 1843, 369; Reichb. Icon. Fl. Germ. vi. t. 303–308; Benth. & Hook. Gen. i. 147; Wats. Proc. Am. Acad. xii. 246; Baill. Hist. des Pl. ix. 108; Pax in Engl. & Prantl, Nat. Pflanzenfam. iii. 1 b. 72.

§ 1. Teeth of the usually more or less inflated calyx not twisted: ovary unicellular at the base: capsule with its five valves normally bifid, but sometimes indistinctly so or entire. (*MELANDRIUM*, Röhl., Deutschl. Fl. 254, and *EULYCHNIS*, Fenzl in Endl. l. c. 974. The separation of these sections in the American species is not practicable, as the inflation of the calyx and toothings of the capsule are not sufficiently definite or constant characters.)

* Native species, Western or Arctic: leaves narrowly lanceolate, spatulate or linear; the radical usually numerous and the cauline few.

+ Tall: stems erect, usually a foot or more in height, several to many flowered: species ranging from Winnipeg to the Sierras, but chiefly of the Rocky Mountains, though not truly alpine.

= Capsule sessile: petals included or scarcely exserted.

L. Drummondii, Wats. Finely grayish-pubescent throughout, often purple-glandular above: stems erect, simple, somewhat rigid: leaves narrow; the lower oblanceolate; the upper lance-linear: flowers on long usually appressed pedicels: calyx in the typical form oblong-cylindric or scarcely ovate, with green nerves: petals small, white or purplish, with the short bifid minutely appendaged blade narrower than the claw: seeds uniformly tubercled, not distinctly crested. — Bot. King Exp. 37, 432, & Proc. Am. Acad. xii. 248. *L. apetala*, Gray, Am. Journ. Sci. ser. 2, xxxiii. 405 in part. *L. apetala*, var.

pauciflora, Porter in Hayden, Rep. 1870, 473. *Silene Drummondii*, Hook. Fl. Bor.-Am. i. 89; Torr. & Gray, Fl. i. 191 in part; Rohrb. Monog. Sil. i. 83. *Elisanthe Drummondii*, Rupr. Fl. Cauc. i. 200. — Fort Vancouver to Winnipeg valley and southward along the Rocky Mts. to N. Mexico and Arizona; flowering through the summer; very variable, especially in pubescence. A lanate form has been found by Bourgeau in the Winnipeg valley; a form distinguished by its broader thinnish leaves, purple glandular pubescence, and more distinctly ovate calyx, has been collected in the Uintas, *Watson*, and at Gray's Peak, *Hooker & Gray*, *Patterson*.

= = Capsule more or less distinctly stiped: petals conspicuously exserted.

L. elata, WATS. Finely grayish-pubescent: stems erect, simple: leaves lanceolate or linear-oblong; the radical spatulate, 3–4 inches in length: flowers nodding on short spreading pedicels: calyx membranaceous, inflated, oblong, with rather short triangular teeth: petals purplish, exserted 4–5 lines from the calyx-tube; the blade bifid, each segment bearing a short narrow lateral tooth; the claw distinctly and rather broadly auricled: stipe of the capsule over a line in length. — Proc. Am. Acad. xii. 249. *Silene Scouleri*, Gray, Am. Journ. Sci. ser. 2, xxxiii. 405. — Rocky Mts., British America, *Bourgeau*; Colorado, *Parry*, *Miss Eastwood*, *Letterman*. This species much resembles *Silene Hallii*, except in the number of styles. Careful observations upon the constancy or variability of this character are greatly to be desired.

L. Parryi, WATS. Viscid-glandular: stems several, nearly naked, scarcely a foot in height: leaves linear, 1–2 inches in length: flowers erect or nodding on rather short pedicels: calyx oblong or obovate, inflated, purple-nerved: petals exserted 2–3 lines, the blade short, bifid, and with lateral teeth; the claw as in the preceding; appendages broad and blunt; stipe of the capsule about a line in length. — Proc. Am. Acad. xii. 248. — Northwestern Wyoming, *Parry*. Styles sometimes 4.

L. nuda, WATS. Finely pubescent, slightly viscid: stems erect, slender, bearing but 2–3 rather remote pairs of short linear leaves: radical leaves oblanceolate, acute, attenuated below to long slender petioles: flowers few, the lower on branches 2–3 inches long: calyx somewhat firmer than in the two preceding, not at all inflated, at first rather narrowly oblong, becoming obovate in fruit: petals white or rose-colored, 7–8 lines long; the blade bifid; the segments again 2-cleft; the claw broadly auricled, less attenuate to the base than in the

preceding: capsule ovate, 5-toothed, very shortly stiped. — Bot. King Exp. 37, & Proc. Am. Acad. xii. 248. — E. Humboldt Mts., Nevada, 9,000 ft., *Watson*.

+ + Alpine or far Northern species.

+ + Calyx ovate, not strongly inflated: flowers on each stem 3 or 5 densely aggregated, rarely solitary: petals exserted: seeds tuberculate.

L. triflora, R. BR. Viscid-tomentose: stems 3–8 inches high: leaves thickish, linear-oblong, often conspicuously ciliate: flowers short-pedicelled: calyx with 10 broad indistinct purple or green nerves: petals white or roseate; the blade obcordate; the claw scarcely auricled. — Ross Voy. App. cxlii., name only; Sommerfelt, Mag. Naturv. ii. (1824), 151, 152; Wats. l. c. 247. *L. apetela*, var. *pauciflora*, Dur. Pl. Kane, 189. *Agrostemma triflora*, Don, Syst. i. 417. *Melandrium triflorum*, Liebm. Fl. Dan. xiv. t. 2356; Rohrb. Linnæa, xxxvi. 231. *Wahlbergella triflora*, Fries, Summa Scand. 155. — Greenland, from Polaris Bay (*Bessel*) southward; Grinnell Land, *Greely*.

Var. *Dawsoni*. Calyx with principal nerves double or triple, joined by interlacing veinlets; the intermediate nerves beneath the sinuses inconspicuous or wanting: petals very narrow; the blade oblong, bifid, hardly to be distinguished from the narrow claw. — Gravel banks, N. British Columbia, 100 miles northeast of Dease Lake, *Dr. G. M. Dawson*.

+ + Calyx ovate, scarcely inflated: flowers erect or slightly nodding in anthesis: stems usually 1-flowered, occasionally loosely several-flowered.

= Rocky Mountain and Western alpine species.

L. Kingii, Wats. Densely covered with a very short pubescence, somewhat glandular above: stems slender, erect, 4–6 inches high, 1–2-flowered: leaves narrowly linear: the blade of the petals rather short and broad, emarginate; the claw with broad ciliated auricles; appendages oblong: filaments pubescent. — Proc. Am. Acad. xii. 247, exclusive of Wyoming plant. *L. Ajanensis?* Wats. Bot. King Exp. 37. — Peaks of the Uintas, N. Utah, *Watson*. Additional material of this little known species may perhaps show it to be merely a Southern form of *L. affinis*.

L. montana, Wats. Glandular-pubescent: root thickish, subsimple: stems erect, 2–4 inches high: leaves linear, 1–1½ inches in length: calyx green- or rarely purple-nerved, 5–6 lines long; the teeth short, scarcely acute: petals narrow, about equalling or a line or two exceeding the calyx; the blade small, bifid; the claw narrow, ½–¾ lines in breadth; appendages small or absent: filaments naked: capsule sessile or nearly so. — Proc. Am. Acad. xii. 247, excl. of

specimens from the Uintas. *L. apetal*a, Gray, Am. Journ. Sci. ser. 2, xxxviii. 405, & Proc. Acad. Philad. 1863, 58 in part. *L. Kingii*, var. with naked filaments, Wats. l. c. 247. — Mountains of Colorado, Parry, Hall & Harbour, Scovill, Wolf; N. W. Wyoming, Parry.

= = Arctic or sub-arctic species, or at least of the far North.

L. affinis, VAHL. Glandular-pubescent, 3–6 inches high: leaves oblanceolate-linear, $\frac{3}{4}$ –3 inches in length: calyx ovate-elliptic, usually contracted at the mouth: petals white or pink; the blade narrow, entire or retuse, narrowed from near the end to the summit of the more or less distinctly auricled claw; appendages oblong. — Vahl in Fries, Mant. iii. 36 (1842). *L. triflora*, Hornem. Fl. Dan. xiii. t. 2173. *L. apetal*a, Hook. f. Arct. Pl. 321 in part. *Melandrium affine*, Vahl in Liebm. Fl. Dan. xiv. 5, obs. *Wahlbergella affinis*, Fries, Summa Scand. 155. *Melandrium involucratum*, var. *affine*, Rohrb. Linnæa, xxxvi. 217. — Greenland to N. Alaska, *McLenegan*, and according to Rohrb. l. c. southward to Labrador. Warming in Vidensk. Selsk. Forhand. 1886, 129, states that in Norway the flowers are of two kinds, perfect and pistillate, and that the petals in the latter are devoid of appendages and auricles.

L. Tayloræ. Very slender, 1–1½ feet high, puberulent, nearly smooth below, glandular above: stem erect, bearing 3–4 pairs of leaves and two or three long slender almost filiform 1–3-flowered branches: leaves thin, lance-linear, acute or attenuate both ways, finely ciliate, and pubescent upon the single nerve beneath, otherwise glabrate, 2–2½ inches in length: flowers terminal or subterminal on the branches: calyx ovate, not much inflated, about 4 lines long, in anthesis but 2 lines in diameter, with green nerves interlacing above; the teeth obtuse, with broad green membranous ciliate margins: petals 1½ times the length of the calyx; the blade obcordate, 1¼ lines long, considerably broader than the slender narrowly auricled claw; appendages lance-oblong. — Peel's River, Mackenzie River delta, *Miss E. Taylor*, July, 1892. A fragmentary specimen collected on the Kowak River, N. Alaska, by *McLenegan*, may be doubtfully referred to this species.

++ ++ ++ Calyx large, much inflated, almost globose: flowers commonly pendulous in anthesis: seeds margined: stems one-flowered except in var. *elatior*.

*L. apetal*a, L. More or less viscid-pubescent: stems 2–6 inches high: flowers perfect or pistillate, at first pendulous, but becoming erect in fruit: petals in the typical form included; the blade short, bifid; the segments rather irregular, sometimes with a small lateral lobe; the claw auricled. — Spec. 437. *L. frigida*, Schrank, Pflanz.

Lab. 25. *L. montana*, Wats. Proc. Am. Acad. xii. 247 (so far as the Utah specimens are concerned). *Agrostemma apetalum*, Don, l. c. i. 416. *Melandryum apetalum*, Fenzl in Ledeb. Fl. Ross. i. 326; Warming, Bot. Foren. Festschr. 1890, 251, f. 25, 26. *Wahlbergella apetalum*, Fries, l. c. 155. — A polymorphous species, the forms of which have been elaborated by Regel in Radde's Reisen in Ost-Sib. i. 325–329. N. Greenland and Grinnell Land to Alaska and southward along the Rocky Mountains to Montana, *Canby*, and Uintas, N. Utah, *Watson*.

Var. *glabra*, REGEL. Glabrous throughout, otherwise as in the type. — Regel, l. c. 325 & 327. — Rocky Mts. of Brit. Amer., *Bourgeau*; St. Paul's Isl., Alaska, *Elliott*; Schmagin Isl., *Harrington*. The Alaskan form differs from Bourgeau's plant, upon which the variety was founded, in having much larger thinner leaves.

Var. *elatio*r, REGEL (extended). Pubescent, taller, 6–12 inches in height: stems commonly several-flowered: petals sometimes considerably exserted. — Regel, l. c. 328, including var. *macropetala*, so far as the American specimens are concerned. — Kodiak Isl. and northward in Alaska to Kotzebue Sound, acc. to Regel.

* * European species, adventive in the Eastern and Middle States and in Canada: corolla much exserted.

+ Leaves usually large, cauline, lanceolate or ovate-lanceolate: flowers mostly diœcious: valves of the capsule distinctly 2-toothed.

L. DIURNA, Sibth. (RED LYCHNIS. RED CAMPION.) Calyx oblong, rather short, 4–6 lines long, reddish; the teeth triangular-lanceolate, acute: corolla red or pink (rarely white), expanding in the morning: capsule large, globose, with a wide mouth; the teeth recurved. — Fl. Oxon. 145; Reichb. l. c. vi. t. 304. *L. dioica*, var. *α*, Linn. Spec. 437 in part, and var. *α*, *rubra*, Weigel, Fl. Pom.-Rug. 85. *Melandrium silvestre*, Röhl. Deutschl. Fl. ed. 2, ii. 274. *M. rubrum*, Garcke, Fl. Deutschl. ed. 4, 55. — Not infrequent in Atlantic States.

L. ALBA, Mill. (EVENING LYCHNIS. WHITE CAMPION.) Calyx green, longer than in the preceding; the teeth lance-linear, attenuate: corolla more commonly white, opening in the evening: capsule ovate-conical; the teeth erect or slightly spreading. — Dict. ed. 8 (1768). *L. dioica*, var. *β*, Linn. Spec. 437. *L. vespertina*, Sibth. Fl. Oxon. 146 (1794). *Melandryum album*, Garcke, l. c. 55. — Ballast and waste lands, sometimes by roadsides and in cultivated fields, chiefly eastward.

+ + Leaves narrower: flowers perfect: valves of the capsule 5, entire.

L. FLOS-CUCULI, L. (RAGGED ROBIN.) A slender smoothish perennial, with a furrowed, sometimes minutely roughened stem, 1½–2 feet high: lower leaves oblanceolate; the upper lance-linear: calyx

oblong-ovate, equally 10-ribbed: flowers cymose-paniculate: petals pink or red, cleft to below the middle into 4 linear acute segments. — Spec. 436. *Coronaria Flos-cuculi*, A. Br. Flora, 1843, 368. — Moist fields, New Brunswick, New England, and New York.

§ 2. *VISCARIA*, Röhl. (as genus). Calyx not inflated; the teeth not twisted: ovary septate at the base: the teeth of the capsule as many as the styles. — Deutschl. Fl. ed. 2, ii. 37; Endl. Gen. 973.

L. alpina, L. Smooth, biennial or perennial, erect, 2 inches to a foot in height: leaves numerous, clustered at the base, linear or oblong, thickish; the cauline 2–4 pairs, erect or ascending: flowers small, the densely clustered cymes forming a terminal head: bracts conspicuous, membranaceous, tipped with red: calyx short-campanulate or turbinate, membranaceous, scarcely nerved; the teeth bright red: petals pink, bifid; segments linear. — Spec. 436; Torr. & Gray, Fl. i. 194; Reichb. Icon. Fl. Germ. vi. t. 307; Wats. l. c. 246. *Lychnis Suecica*, Lodd. Cab. 881. — Greenland to Labrador, and Mt. Albert, Quebec, Allen, Macoun. (Europe.)

§ 3. *AGROSTEMMA*, Fenzl. (*CORONARIA* § *PSEUDAGROSTEMMA*, A. Br.) Calyx teeth filiform, twisted: flowers few, large: petals with conspicuous awl-shaped appendages: teeth of the capsule as many as the styles: plant woolly. — Endl. Gen. 974.

L. CORONARIA, Desrousseaux. (*MULLEIN PINK*.) Covered with dense white wool throughout: stem $1\frac{1}{2}$ –3 feet high: leaves oval or oblong: calyx ovoid; the alternating ribs more prominent; the teeth small, much shorter than the tube: petals large, crimson. — Desr. in Lam. Dict. iii. 643. *Agrostemma Coronaria*, L. Spec. 436. *Coronaria tomentosa*, A. Br. Flora, 1843, 368. — A handsome plant, tending to escape from cultivation in several localities in New England and the Middle States. (Europe.)

7. *AGROSTEMMA*, L. *CORN COCKLE*. (Name from ἀγρός, field, and στέμμα, crown.) — A genus of two species, both natives of the Mediterranean region; one of them, growing in cultivated fields, now cosmopolitan, having been widely disseminated in grain seed. — Gen. n. 379; Pax, l. c. 70. *Githago*, Desf. Cat. Hort. Par. 266; Baill. Hist. des Pl. ix. 108. *Lychnis* § *Githago*, DC. Prodr. i. 387; Benth. & Hook. Gen. i. 148. — Although often united with *Lychnis*, these species through the different relative position of the carpels and petals seem to deserve rank as a separate genus, especially if *Sagina* is to be kept distinct from *Arenaria* upon the same ground.

A. GITHAGO, L. Annual or biennial, covered with a long, silky, appressed or spreading pubescence: stem $1\frac{1}{2}$ –3 feet high, somewhat

branched: flowers few, long-peduncled: leaves linear, acute, 2–4 inches in length: corolla 1–1½ inches in diameter; petals obovate, dark purplish red, somewhat lighter toward the claw, and with small black spots: calyx teeth usually an inch or more in length. — Spec. 435. *Lychnis Githago*, Scop. Fl. Carn. ed. 2, i. 310. *Githago segetum*, Desf. l. c. 266.

15. **DRYMARIA**, Willd. (Name from *δρυμός*, an oak copse; some species having been supposed to prefer that habitat.) — A group of low diffusely branched plants, chiefly of the New World; our species being weak annuals. — Willd. in Rœm. & Sch. Syst. v. p. xxxi; HBK. Nov. Gen. et Sp. vi. 21, t. 515, 516; DC. Prodr. i. 395; Wats. Bibl. Index, 102, & Proc. Am. Acad. xvii. 327–329.

* Cauline leaves rather broadly ovate.

D. Fendleri, Wats. An erect annual, 2–10 inches high: stems, peduncles, and petioles finely glandular-pubescent: leaves membranaceous, reniform-ovate, subcordate, abruptly acuminate, nearly smooth, 4–5 lines long, on slender petioles half their length: flowers aggregated in terminal fascicles, or single in the forks; sepals herbaceous, lanceolate, acuminate, 1–3-nerved. — Proc. Am. Acad. xvii. 328. *D. cordata*, Gray, Pl. Fendl. 13. *D. glandulosa*, Gray, Pl. Wright. ii. 18; Torr. Pacif. R. Rep. iv. 70, & Bot. Mex. Bound. 37. — New Mexico and Arizona.

D. holosteoides, Benth. Prostrate, smooth and somewhat glaucous: stems numerous, each bearing 2–3 remote fascicles of leaves and flowers: leaves appearing quaternate, ovate, obtuse, thickish, 3–5-nerved, 3–6 lines long, rather abruptly contracted into a slender petiole 2–3 lines in length: pedicels equalling or slightly exceeding the petioles, 1-flowered: sepals obtusish, 1¾ lines long, with conspicuous membranous margins: seeds black, hooked, or somewhat cocleate. — Bot. Sulph. 16; Wats. Bibl. Index, 103. — Dry bed of Tarlinga Creek, W. Texas, *Havard*. (Lower Calif.)

** Cauline leaves linear, pseudoverticillate.

D. sperguloides, Gray. Covered with a fine grayish pubescence or quite glabrous: radical leaves spatulate, fugacious: stem erect, with spreading branches and pseudoverticels of 4–8 sessile narrow obtuse slightly fleshy leaves 5–10 lines long, ½ line in breadth: inflorescence diffuse; flowers pedicellate. — Pl. Fendl. 11, & Pl. Wright. ii. 19; Torr. Bot. Mex. Bound. 37. — Cornfields, etc., Texas, near Presidio del Norte, *Parry*; New Mexico, *Fendler*, *Wright*; Arizona, *Palmer*, *Lemmon*.

* * * Cauline leaves linear, opposite: stems erect, delicate, much branched: flowers short-pedicelled in the forks of a diffuse inflorescence.

D. effusa, GRAY. Viscid, especially upon the upper part of each internode: radical leaves obovate, seldom persisting; cauline very narrowly linear, obtuse: sepals elliptic, obtuse, or scarcely acute, not distinctly ribbed, considerably exceeded by the petals. — Pl. Wright. ii. 19; Torr. Bot. Mex. Bound. 37. — Mountainous districts, New Mexico, *Wright*; Arizona, *Rothrock*, *Lemmon*. (Adjacent Mexico, *Thurber*.)

D. tenella, GRAY. In size and habit closely resembling the preceding, but glabrous and not viscid: sepals acutish, rather strongly ribbed, a line in length, about equalling the petals. — Pl. Fendl. 12, & Pl. Wright. ii. 19. — Shady places, woodland, New Mexico, *Fendler*, *Wright*, *Greene*. (Adjacent Mexico, *Pringle*.) *D. nodosa*, Engelm., of Mexico, is a third closely related species, but has glandular stems, and somewhat larger flowers with attenuate rather rigid sepals $1\frac{1}{2}$ –2 lines long.

16. *POLYCARPON*, Læfving (*πολύς*, much, many, and *καρπός*, fruit, from the innumerable capsules.) — A small genus of low, much-branched annuals. Flowers numerous, cymose, very small. — Genus ascribed to Læfving in Linn. Gen. ed. 6, n. 105; DC. Prodr. iii. 376; Torr. & Gray, Fl. i. 173.

P. tetraphyllum, L. Nearly or quite smooth: stems 2–6 inches long, prostrate, or ascending: leaves quaternate or opposite, oblong or obovate, obtuse, $2\frac{1}{2}$ –6 lines long, abruptly narrowed to short petioles: stipules and bracts scarious, acuminate, the latter equalling the rather sharply acuminate sepals: petals white. — Spec. ed. 2, 131; Eng. Bot. t. 1031; Ell. Sk. i. 182. — Introduced in S. Carolina near Charleston and at Camden, *Curtis*. (Old World.)

P. depressum, NUTT. Smaller: stems numerous, 1–2 inches long: leaves opposite, spatulate, obtuse, attenuate to slender petioles: bracts much shorter than the scarcely carinate sepals: petals very narrow or subfiliform: capsule spherical. — Nutt. in Torr. & Gray, l. c. 174; Brew. & Wats. Bot. Calif. i. 71. — Sand hills near San Diego, *Nuttall*, *Cleveland*; near San Bernardino, *Lemmon*. (Lower Calif., *Orcutt*, *Palmer*.)

17. *LÆFLINGIA*, L. (Dedicated to Peter Læfving, a Swedish traveller and naturalist, born 1729.) — Small spreading glandular somewhat rigid annuals, with subulate inconspicuous leaves, and sessile solitary or more commonly fasciculate greenish flowers. — Gen. ed. 6, n. 52; DC. Prodr. iii. 380.

* Outer sepals provided with lateral teeth.

L. Texana, Hook. Branching from near the base: branches 4–6 inches long: flowers chiefly borne upon short secund and somewhat recurved branchlets: sepals straight or slightly curved: stamens in the flowers examined 3 (5 according to Hook. and Gray): seeds rather broadly obovate. — Icon. t. 285 (text with t. 275). Brandegee, Zoe, i. 219. *L. squarrosa*, Torr. & Gray, Fl. i. 674; Gray, Gen. ii. 23, t. 106 (Figs. 7 and 8 represent the seed too narrow and with cotyledons incumbent instead of accumbent as is the case); Coult. Man. of S. W. Tex. 31. — Central and Eastern Texas, *Drummond, Wright, Hall*; differing slightly, but as it appears constantly, from the following.

L. squarrosa, Nutt. Smaller, 2–4 inches high: branchlets scarcely or not at all secund: sepals pretty strongly recurved and squarrose: stamens 3 (–5?): seeds oblong or elliptical in outline. — Torr. & Gray, Fl. i. 174; Brew. & Wats. Bot. Calif. i. 72; Wats. Bibl. Index, 104 (excl. syn.); Brandegee, l. c. 219. — Sandy soil, California, San Diego northward to Sierra Co., *Lemmon*.

* * Sepals all entire.

L. pusilla, Curran. Low and condensed, 2–3 inches in height; branches closely flowered, not distinctly secund: sepals lanceolate, acute and bristle-tipped: stamens (in flowers examined) 3. — Bull. Calif. Acad. i. 152; Brandegee, Zoe, i. 220. — Tehachapi, California, 4,000 ft., *Mrs. Curran*. — This very interesting species has the calyx of a *Cerdia*, but is distinguished from that genus by the number of stamens, the absence of a style, and the accumbent position of the cotyledons, which in *Cerdia* appear to be constantly incumbent.

18. **STIPULICIDA**, Michx. (Name from the Latin *stipula*, stalk, blade, stipule, and *cædere*, to cut, from its deeply divided stipules.) — A monotype, scarcely differing in its technical characters from the Old World *Polycarpæa*, but with a very distinct habit, somewhat that of an *Erygonum*. — Fl. i. 26, t. 6; Gray, Gen. ii. 25, t. 107.

S. setacea, Michx. l. c. A span high: root simple: the stems dichotomously forked: radical leaves spatulate, 2–4 lines long, narrowed to a slender petiole: flowers small, fascicled at the ends of the naked branches. — Chapm. Fl. 47. *Polycarpon stipulicidum*, Pers. Syn. i. 111; Pursh, Fl. 90. — Sandy soil, North Carolina to Florida.